INSTALLATION AND OPERATION MANUAL

for

HDC-2080Z03

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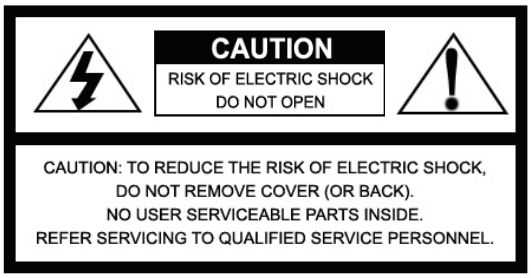
WARNING To prevent fire or shock hazard, do not expose the unit to rain or moisture.

The symbol is intended to alert the user to the presence of important operating and maintenance(servicing) instructions in the literature accompanying the unit.

The symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,
DO NOT REMOVE COVER (OR BACK).
NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

Caution

To prevent electric shocks and risk of fire hazards, do NOT use other than specific power source.

Warning(NTSC version) -- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Caution -- Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Mains power quality should be that of a typical commercial environment. If the user of the model requires continued operation during power mains interruptions, it is recommended that the model be powered from an uninterruptible power supply (UPS) or a battery."

Notice -- The images used in manual are processed to help comprehension and may differ from actual video of the camera.

WARNING

NEVER USE THIS CAMERA

1. **IN WATER.**
2. **IN AREA WHERE HAS SHOCK OR VIBRATION WHICH RESULTS IN THE PROBLEM FOR AUTO FOCUSING.**

1. Safety Instructions and Notes

• Please read this safety and operating instructions before putting the camera into operation.
• Keep the manual in a safe place for later reference.
• Pay attention to safety when laying the connection cable and observe that the cable is not subjected to heavy loads, kinks or damage and no moisture can get in.
• Never open the device such as boards or lens.
The warranty becomes void if repairs are undertaken by unauthorized persons.
• Maintenance and repair have to be carried out only by authorized service centers.
• Use only a mild detergent to clean the housing.
• Keep clean the window surface from the dirt or dust, which may reflect the infrared light to the lens at night..
• The camera should never be operated beyond the technical specifications. This can lead to destruction.
• The camera should never be operated in the water.

2. General Descriptions

This camera realizes the natural and crisp image as you see the scene in front of you by adopting Auto Focus Full HD(1920x1080p) camera module.
Highly detailed pictures can be achieved and color reproducibility deserves attention.

With 3x Optical Zoom and 32x Digital Zoom,
- Offers the flexible observation
- Provides max. 96x zoom

With ICR mechanism,
- Enhances its sensitivity about 10x at night time
- Can accepts the infrared light

With 24VAC/12VDC dual power design,
- Offers the flexibility of installation
- Ensures the reliability

Main features are;

- HD-SDI output
- Optical 3X Auto Focus Zoom
- Digital 32X Zoom
- 1920x1080p(30fps/25fps)
- f3~9mm, 3X Day & Night Zoom Lens

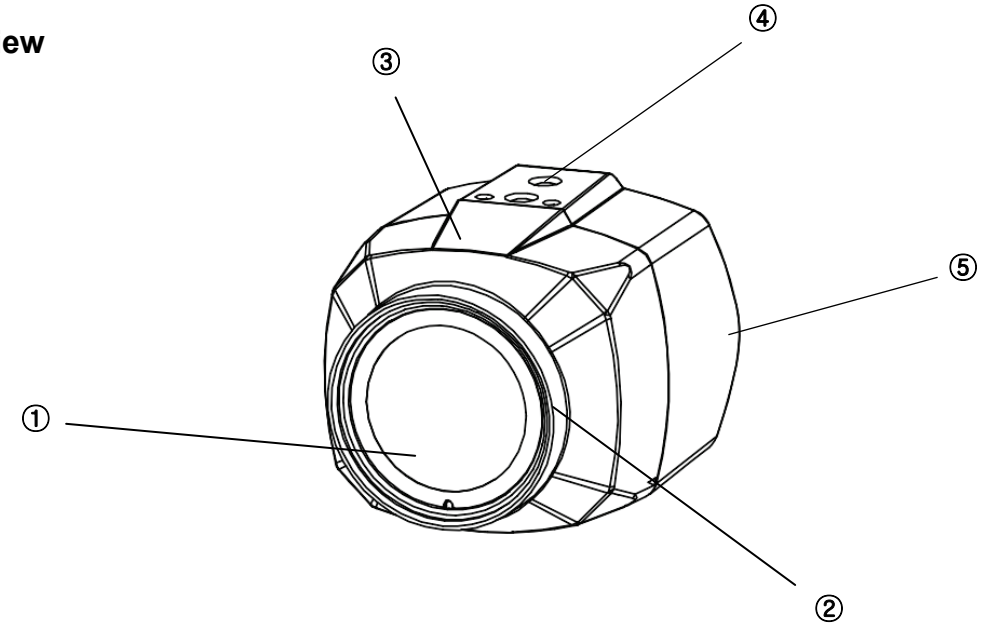
- Wide Dynamic Range
- 3D Noise Reduction
- Sense Up(~x8) / AGC(0~20)
- Scale down the image to 720p without loss of field of view
- MOTION ZOOM(Automatic Zoom IN/OUT when motion is detected)
- Pointing Zoom (Set the off-centered location to be the center of zoom in Motion Zoom)
- Motion Detection / Motion Deblur / Privacy Mask / Defog
- Focusing Status Indicator on Screen
  - (Blue) Focusing in process
  - (White) Focusing Completed
- Pixel Defect Compensation
- ID / TITLE / ZOOM RATIO Display
- H / V / HV FLIP
- Lens Refresh / Lens Initializing Set
- LSC(Lens Shade Compensation)
- Enhanced Sensitivity by DSS technology
- Remote Control via RS-485(Pelco-D, Pelco-P)
- OSD Menu & Video Sub-out for Easy installation and Maintenance
- Input voltage: 24VAC/12VDC (Dual Power)
- Circuit protection against faulty connection.
- Isolated power supply against ground loop problem

3. Supplied Items

• 1x FULL HD AF Zoom Camera
• 1x Installation and Operating Instructions

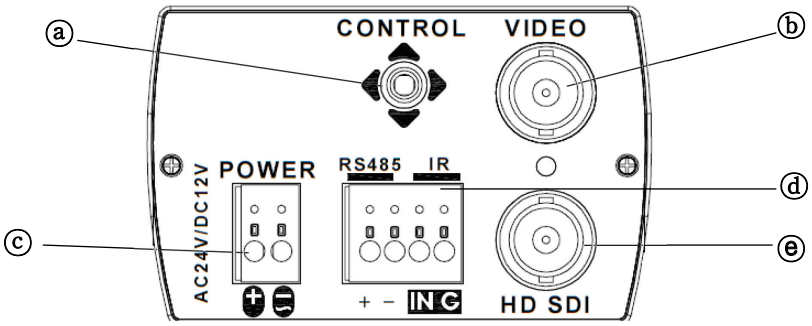
4. Part Names

Front view



① Window
② Window Hood
③ Front Body
④ Mount Hole (Top and Bottom)
⑤ Rear Body

4.1 Rear side view



ⓐ OSD menu switches (Up/ Down/ Left/ Right / Enter)
ⓑ Video Output Connector (BNC)
ⓒ Power Input Terminal
ⓓ RS-485 / IR Connector
ⓔ HD-SDI Output Connector

5. Installation and commissioning Instructions

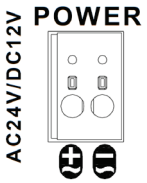
- Make sure the power is removed before the installation.
- Follow the order for applying power.
  First connect the low voltage (DC12V or AC24V), then plug the AC adapter to AC outlets to avoid an improper reset from power jitter and a damage from the surge voltage when no load.

5.1. Installation

The camera has a 1/4” thread insert on its top and bottom side for mounting the camera to a tripod or the wall or ceiling with a corresponding mount.

5.2. Power Supply Connections

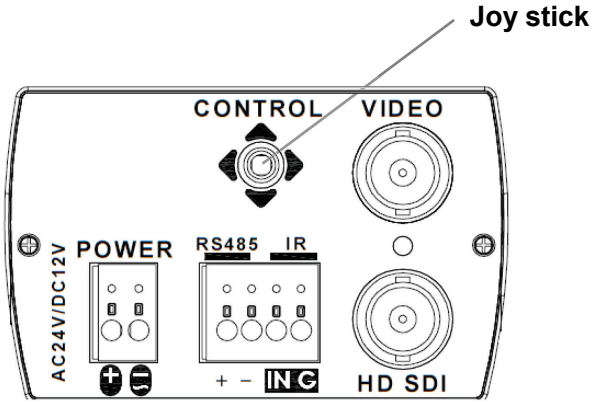
Camera can work with either 24VAC or 12VDC, dual voltage power. It does NOT require the polarity-matched connection for 12VDC supply. Primary and secondary grounds are completely isolated to avoid the possible ground-loop problems. Its excellently wide operating voltage range of 10.5V-30V for DC and 12-28.8V for AC gives an extra flexibility at the installation.



6. Setup Menu

6.1 In the menu

Setup menu can be accessed and controlled by OSD control joy stick at the back of camera.
Five commands are available with the joy stick.
Picture of OSD may differ by the models.



SYMBOL descriptions for joystick operation;

- ▲,▼,◀,▶ denotes the directions of Joystick lever operation.
- denotes the long press down straightly for about 1.5 seconds.

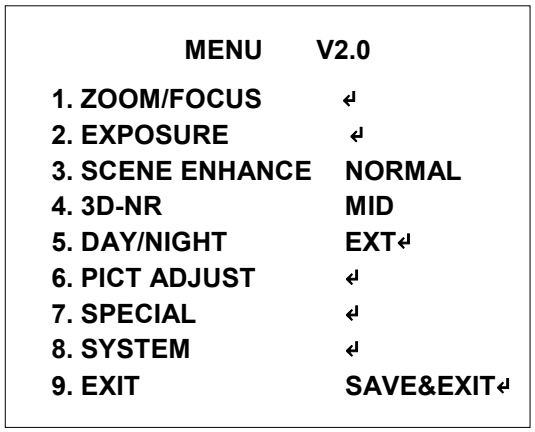
Zoom & Focus Adjustment
(Only works when OSD Menu is not operating)

▲ Zoom In
▼ Zoom Out
◀ Focus Near
▶ Focus Far

In the menu, use ▲,▼ to move menu, ◀,▶ to change the settings and press to select or enter.
The actual value of FACTORY DEFAULT may differ from this manual due to further technical improvements.

6.2 MAIN menu

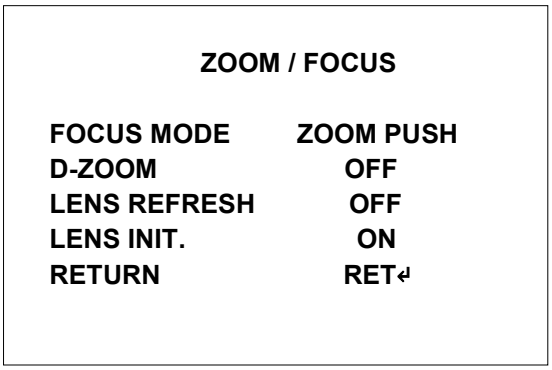
Press to enter the setup menu for about 1 second.



MAIN	Default	Descriptions
ZOOM/FOCUS	-	Sets FOCUS MODE, D-ZOOM, LENS REFRESH and LENS INIT. See '6.3 ZOOM/FOCUS' for detail.
EXPOSURE	-	Sets EXPOSURE MODE, BRIGHTNESS, SENS-UP, AGC and DEBLUR.. See '6.4 EXPOSURE' for detail.
SCENE ENHANCE	NORMAL	SCENE ENHANCE provides the several ways to enhance the video in the various environments with the settings in NORMAL, WDR, D-WDR, BLC and HLC.

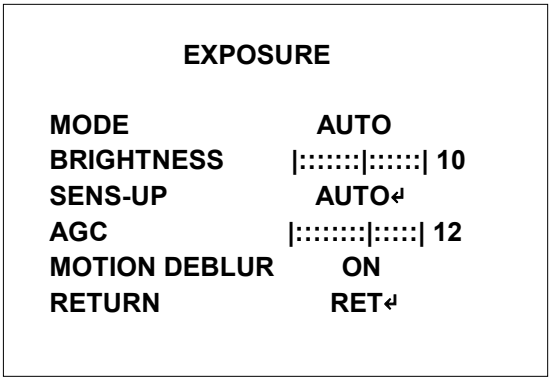
MAIN	Default	Descriptions
SCENE ENHANCE	NORMAL	**NORMAL** – Optimized for the normal indoor and outdoor in the good lighting condition. **WDR** – Improves the visibility for the high bright area and the dark area by the double captures of image with LONG and SHORT exposures. With WDR ON, the frame rate becomes half by the double captures. WDR level can be selected from LOW, MID and HIGH. Care should be taken to select this mode because video may lose its quality in some environments by the over compensation. **D-WDR** – Improves the visibility by compensating the video gain for the dark area. Noise can increase in the dark area accordingly. **BLC** – Improves the visibility for the dark object by the bright back light. Outside area of BLC window can over saturate. BLC has a target window for compensation and its size and position can be set by H-POS, V-POS, H-SIZE and V-SIZE. **HLC** – Cuts out the highlight area with black mask and excludes it from compensation. Lower HLC LEVEL cut out video from the lower level.
3D-NR	MID	3D-NR is a very sophisticated and powerful time-based noise reduction technology by monitoring the noise for the several video frames and defining and eliminating them consecutively at low light. Higher setting reduces noise much more but results in losing the sharpness and the tail effect or the motion blur for the fast moving target at low light.
DAY/NIGHT	EXT	Sets DAY / NIGHT to EXT, AUTO, COLOR and B/W. SMART IR can be set to reduce the saturation by the strong IR illumination in the night in any menu of EXT, AUTO and B/W(NIGHT) Setting SMART IR in any menu is identically applied to other menu. Zero(0) turns off SMART IR and High setting avoids the saturation strongly but the corners will be darker accordingly. **IR LED Control(AUTO/OFF)** is available with IR LED model only. If IR LED is set to OFF, IR LED will be turned OFF but DAY or NIGHT is still determined by the built-in light photo sensor. **EXT** – DAY or NIGHT is determined by the built-in light photo sensor. Camera with IR LED must be set to EXT. **AUTO** – Used when DAY or NIGHT is determined by light level through the lens and DAY from/to NIGHT is switched automatically by the scene brightness. D<-->N THRESHOLD, D<->N GAP, D<->N DELY and SMART IR can be set in the menu. When EXPOSURE>AGC is less than 12, DAY/NIGHT AUTO is disabled and forcibly switches to ___(DAY) to avoid the malfunction. EXT, B/W(NIGHT) and COLOR(DAY) is independent on AGC level. When EXTERNAL IR LED is used with NON IR LED model, please set to IR LED MODE ON. **B/W(NIGHT)** – Forcibly removes IR cut filter and switches to B/W regardless of light level. **COLOR(DAY)** – Forcibly DAY/NIGHT is disabled and outputs color video.
PICT ADJUST		Sets WHITE BAL, SHARPNESS, COLOR GAIN, GAMMA, See '6.5 PICT ADJUST' for detail.
SPECIAL		Sets CAM TITLE, MOTION, PRIVACY, LANGUAGE, PIXEL COMP, TV SYSTEM. See '6.6 SPECIAL' for detail.
SYSTEM		Sets TV SYSTEM, RESOLUTION, COMM.SETUP, LANGUAGE and FACTORY DEFAULT.
EXIT		SAVE & EXIT – Exits the menu after saving the parameters. EXIT – Exits the menu without saving the menu.

6.3 ZOOM/FOCUS



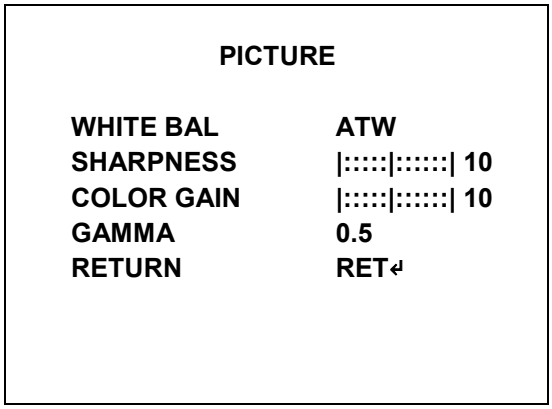
ZOOM / FOCUS	Default	Descriptions
FOCUS MODE	ZOOM PUSH	ZOOM PUSH, AUTO and MANUAL modes are available for focusing. **ZOOM PUSH** – Focusing is activated only when zoom in/out is working. **AUTO** – Focusing is working always. **MANUAL** – Focusing can only be adjusted by ▲,▼ of OSD control joystick or the remote control via RS-485.
D-ZOOM	OFF	D-ZOOM(Digital zoom) is available up to 32x. D-ZOOM starts working when the optical zoom reaches its maximum tele-position. Zoom ratio is displayed on the right bottom corner of the monitor if SPECIAL>DISPLAY>ZOOM RATIO is set to ON.
LENS REFRESH	OFF	LENS REFRESH can be set to 1~10day and performs the scheduled LENS Initialization automatically. Every initialization occurs when the time reaches the scheduled time after setup or power up. When LENS REFRESH initiates LENS Initialization, a notification 'LENS INITIALIZING…' appears on the top left corner on the monitor.
LENS INIT	ON	Lens initialization is necessary during the installation or the regular operation to align the position data with the mechanical positions whose lens elements may move and deviate from its calibrated position by the shock or vibration, for example, during the transportation. LENS INIT starts the lens initialization when pressing the joystick lever straight down for about 1.5sec. LENS INIT checks the positions for zoom and focus at both of the end positions and saves them for the references. Lens initialization is automatically executed at power up. **CAUTION** **It is strongly necessary to execute LENS INIT in cases below;** **1) At the final step for the installation.** **2) When focus becomes out of control by the shock or vibration**.

6.4 EXPOSURE



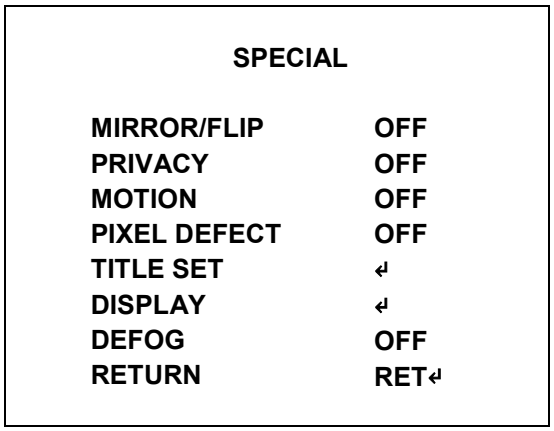
EXPOSURE	Default	Descriptions
MODE	AUTO	Can set EXPOSURE MODE to AUTO, IRIS Priority, SHUT. Priority, MANUAL and Flickerless. **AUTO** – Optimizes the video level by controlling the iris and the shutter speed automatically. **IRIS Priority** – Selects to fix IRIS in a certain apperture and the video level is controlled by an automatic shutter control. Lower IRIS LEVEL will close more iris and increase the field of depth in the daytime but significantly decrease the low light performance. Too much low IRIS LEVEL will result in the foggy video by the diffusion from the lens iris. **SHUT. Priority** - Selects to fix SHUTTER speed in a certain speed and the video level is controlled by an automatic iris control. This mode is useful when the color rolling occurs under the fluorescent lighting. It is not recommendable at outdoor in the daytime. **MANUAL** – Iris and Shutter can be set to fix. **Flickerless** – Reduces the flicker in video when US(60Hz)/EU(50Hz) mode is used in 50Hz/60Hz fluorescent lighting respectively. SHUT. Priority, MANUAL and Flickerless modes disable SENS-UP and MOTION BLUR functions.
BRIGHTNESS	10	Adjusts the brightness of video(0~20).
SENS-UP	AUTO	The brighter video can be obtained by increasing the exposure time in the night with SENS-UP. SENS-UP is the maximum integrations of frame by DSS(Digital Slow Shutter) in the low light. **AUTO** – SENS-UP is enabled or disabled automatically by the scene brightness. Higher SENS-UP can get the brighter video but the slower frame rates with motion blur and more white pixels. **OFF** – Disables SENS-UP.
AGC	12	AGC amplifies the video gain for brighter video but noise and white pixel accordingly. AGC level less than 10 disables AUTO in DAY/NIGHT.
MOTION DEBLUR	ON	ON enables MOTION DEBLUR to reduce the motion blur in a certain indoor enviroment. Noise or color rolling can increase.

6.5 PICT ADJUST



PICTURE	Default	Descriptions
WHITE BAL	ATW	ATW, ATWext, ONE PUSH and MANUAL are available for the white balance modes. **ATW** – White balance is continuously working along with the color temperature changes in the range of 2,000K~8,500K. **ATWext** – White balance is continuously working along with the color temperature changes in the range of 1,800K~11,000K. **ONE PUSH**- White balance works only during ● is pressed. **MANUAL** – White balance is fixed to the settings by R_GAIN and B-GAIN. This mode can be used only when the color temperature does not vary.
SHARPNESS	10	Adjusts the sharpness of video.
COLOR GAIN	10	Adjusts the color level of video.
GAMMA	0.5	Adjusts the gamma of video.

6.6 SPECIAL

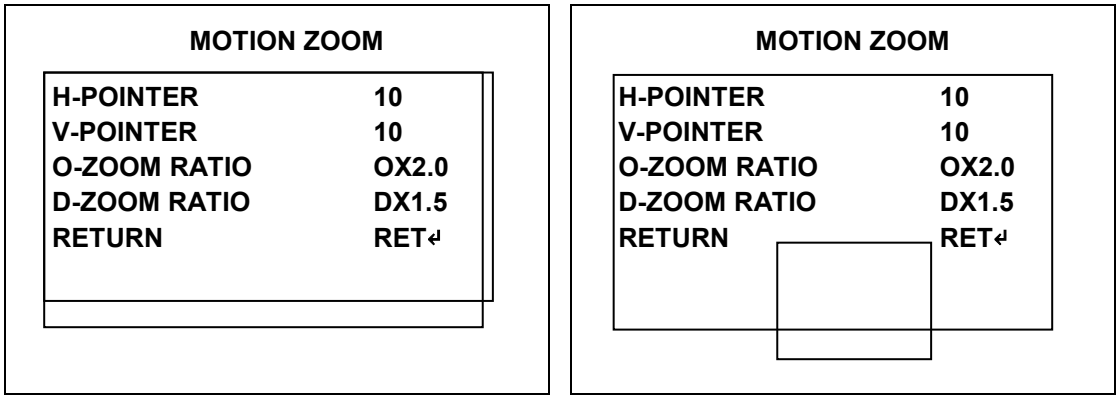


SPECIAL	Default	Descriptions
MIRROR/FLIP	OFF	Reverses the video left and right and/or up and down by MIRROR/FLIP. **OFF** - Normal display without mirroring or flipping **Hor**. – Video is reversed left and right. **Ver**. – Video is reversed upside down. **HV** – Video is reversed left and right and upside down. When the video is reversed by Ver. or HV, then the joystick directions are reversed accordingly. This feature is very useful when a camera in installed in upside dawn.
PRIVACY	OFF	10 Privacy zones which can be enabled individually by ZON DISP are available to mask the video. **ZONE NUMBER** – Set a number to select a privacy zone from 1~10. **ZONE DISP** – ON enables a relevant privacy zone. **H-POS, V-POS, H-SIZE** and **V-SIZE** – Adjust the size and position of zone. **COLOR** – Select the color used for masking the zone form eight colors. **TRANSPARENCY** – Defines the transparency for the mask zone.

MOTION	OFF	MOTION can detect the changes in the motion window and displays the results in blocks and/or a text message. **SENSITIVITY** – Adjusts the detection sensitivity for motion. High value increases the sensitivity to detect the small motion easily. Too low sensitivity will cause the erratic detection by the tree leaves or the light level changes. **H-POS,V-POS, H-SIZE** and **V-SIZE** - Adjust the size and position of the detection window. **BLOCK DISP** – ON enables to display the blocks for the detected area. **MOTION OSD** – ON enables to display a text message, MOVING !!!, **MOTION ZOOM** – ON enables to Automatic Zoom IN/OUT when motion is detected and also enables MOTION OSD to ON. Area to be zoomed in by MOTION ZOOM can be set at SPECIAL> MOTION> MOTION ZOOM >ZOOM TARGET. Adjusting ◀,▶ (Joystick) for ZOOM TARGET varies the viewing angle to be zoomed when the motion occurs.. **STAY ZOOMING** – Sets the duration time for zooming by Motion.
PIXEL DEFECT	OFF	Detects and compensates the white pixels which become defective. Once CALIBRATE is selected, the pixel calibration is initiated with lens closed and can't cancel. **THRESHOLD** – Defines the level of detection and low value detects more pixels. Be sure to set the value so that the pixels are uniformly blinking over the entire screen. Too low value will get the bad results because too many pixels are detected as the bad pixels and the maximum number of pixels for compensation will be filled by the upper area. **EXECUTE** - Long pressing will execute the pixel calibration for the detected pixels. Menu will exit automatically after compensation.
TITLE SET	-	Camera title(name) can be set and edited up to 15 alpha numeric and symbolic characters from ASCII codes(ENGLISH only). ▲,▼,◀,▶ moves the cursor to choose a character and selects it. The selected characters are added and displayed on the top left Corner and the cursor moves right automatically for next input. **SP** - Space is inserted when pressed ●. **BS** – Cursor moves back when pressed ●. **CLR** – Clears all the characters on input line when pressed ●. **POS** – To be able to set the title position by ▲,▼,◀,▶ and ●.

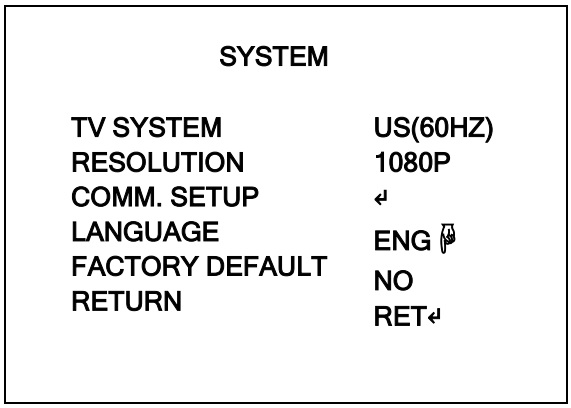
DISPLAY	-	Enables or disables to display the OSD. **ID** – ON enables to display the camera ID defined by SYSTEM>COMM. SETUP>CAM ID. **TITLE** – ON enables to display the camera title(name) set by SPECIAL> TITLE SET. **ZOOM RATIO** – ON enables to display the zoom ratio on the bottom right corner. OZx.x appears during the optical zoom and DZx.x will display by multiplying the optical zoom ratio and the actual digital zoom ratio. **FOCUS INDICATE** – ***** mark on the bottom right corner indicates the focusing status in blue during focusing and white after finishing.
DEFOG	OFF	**AUTO** – Enhance the foggy video automatically according to status of scene **MANUAL** – Sets to enhance the foggy video manually regardless of status of scene **LEVEL** – LOW, MID, HIGH Video quality can be less in normal environments.

6.6.1 MOTION ZOOM



MOTION ZOOM	Default	Descriptions
H-POINTER	10	Available to set Horizontal area of MOTION ZOOM. Adjustable H-PONTER Value is 1 to 19
V-POINTER	10	Available to set Vertical area of MOTION ZOOM. Adjustable V-PONTER Value is 1 to 19
O-ZOOM RATIO	OX2.0	Adjust Optical Zoom Ratio (up to 3x) when motion is detected.
D-ZOOM RATIO	DX1.5	Adjust Digital Zoom Ratio (up to 3x) when motion is detected.

6.7 SYSTEM



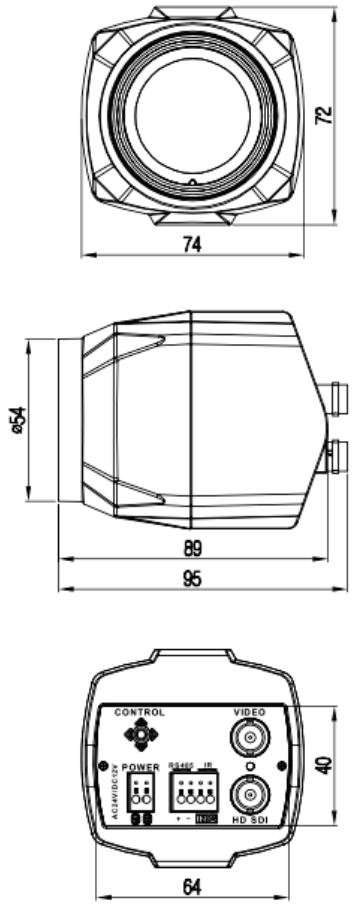
SYSTEM	Default	Descriptions
TV SYSTEM	EU	Selects HDTV standards for US(60HZ) or EU(50HZ). By this selection, 2nd analog video output switches to NTSC or PAL accordingly.
RESOLUTION	1080P	1080P and 720P are available. 720P Image is scaled down from 1080P without loss of field of view 1080P outputs the frame rate at 30P/25P. 720P outputs the frame rate at 60P/50P but the image refresh rate is 30P/25P.
COMM. SET UP	-	COMM. SETUP defines the CAM ID, BAUD RATE and PROTOCOL. Data length, stop bit and parity are fixed to 8bit, 1stop bit and no parity bit. **CAM ID** – Assigns the camera ID from 1~255 for the comm. address. **BAUD RATE** – Selects the baud rate from 2400~115200. **PROTOCOL** – Selects the comm. Protocol from PELCO-D/P or VISCA.
LANGUAGE	ENG	Seven languages are available for ENGLISH, JAPANESE, GERMAN, FRENCH, ITALIAN, SPANISH and POLISH. When changing LANGUAGE, select language and press to load.
FACTORY DEFAULT	NO	RECALL roads and saves the factory defaults

7. Specifications

	HDC-2080Z03
Imaging Sensor	Sony Exmor 1 / 2.9” Progressive Scan CMOS Sensor
Effective Pixels	1,936(H) x 1,097(V)
Min. Illumination	0.0008 Lux (@AGC MAX, DSS x2)
Output Video Resolution	1920x1080(30p/25p), 1280x720(60p/50p)
TV system	EU(50Hz)(switchable to US(60Hz))
Sync. System	Internal
Format	16:9 Video format for most popular commercial HDTV monitors
HD-SDI Video Output	1.485Gbps HD-SDI (SMPTE 292M), Non-Compression
Video Sub-out	PAL standard, 1Vpp @75Ω terminated
HD Transmission Distance	BELDEN 1694A(210m), RG-59(130m)
S/N Ratio	More than 50dB (AGC OFF)
Lens type	3X Day & Night Zoom Lens, f3~9mm , F1.2 (wide) ~ F2.1 (tele)
Zoom Ratio	Optical 3X, Digital 32X Zoom
Day & Night	True Day & Night by ICR
Focus	Auto / Zoom Push / Manual
Exposure Control	Auto / Iris-Priority / Shutter-Priority / Manual / Flickerless
Flip	OFF / H / V / HV FLIP
White balance	ATW / ATWext / ONE PUSH / MANUAL
Minimum Focus Distance	0.5 m~
WDR	True WDR by dual scan in two frames at 15fps.
Functions	NORMAL, WDR, D-WDR, BLC, HLC
Special Feature	MOTION ZOOM (Automatic Zoom IN/OUT when motion is detected) Pointing Zoom (Set the off-centered location to be the center of zoom in Motion Zoom), Motion Detection, Privacy Mask, Pixel Defect Compensation, Defog, Title Set, Lens Refresh Set, Motion Deblur, Focus Indicator
Remote Control	RS-485(Pelco-D, Pelco-P)
Language	English, German, French, Italian, Spanish, Polish, Japanese
IR Input	Low active TTL input from External IR illuminator to avoid the undesirable ICR switch
Power	24VAC / 12VDC DUAL POWER, 220mA
	Circuit protection against faulty connection
	Isolated power supply against ground loop problem
Operating Temperature	-10ºC ~ +50 ºC (Humidity : 30%RH ~ 80%RH)
Housing	Solid Aluminum Cast
External Dimension	74mm x 72mm x 95mm, 300g

● Design and specifications are subject to change for product improvements without prior notice.

8. Dimensional Drawings



(Unit: mm)

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